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| 10/807,351 | 03/24/2004 | Akihito Kusano | 033498-024 | 5379 |

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EXAMINER

BURCH, MELODY M

ART UNIT PAPER NUMBER

3683

DATE MAILED: 11/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|------------------------------|--|
| Office Action Summary | Application No. 10/807,351 | Applicant(s) KUSANO ET AL | |
| | Examiner Melody M. Burch | Art Unit 3683 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 7-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 10-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-14 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-6 and 10-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Re: claims 1-3. Examiner notes that the originally filed specification fails to provide support for the added claim limitation of the controller being capable of individually adjusting the degrees of openness of the first and second proportional solenoid valves to required levels between their fully open and fully closed positions to adjust the wheel cylinder pressure to a required level. Examiner realizes that by definition the proportional valve is capable of varying its degrees of openness. The new matter issue arises not because of the recitation of the varying degrees of openness but because of the recitation of the adjustment to a plurality of required levels between the fully open and closed positions. Examiner notes that US Patent 5813226 to Krone et al., for example, shows a proportional valve 40 that adjusts the degrees of openness to a single required level shown in figure 3 between a fully open position shown in figure 2 and a fully closed position shown in figure 4. Since at a minimum a proportional valve

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may only be adjusted to one required level between fully open and fully closed positions, the recitation of a plurality of required levels added to the claim language after the original filing constitutes new matter. Examiner suggests amending the claim language to recite --adjusting the degrees of openness of the first and second proportional solenoid valves to *at least one* required level between their fully open and fully closed positions--.

The remaining claims are rejected due to their dependence on one of claims 1-3.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 10, 11, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6199964 to Ota et al. in view of US patent 6739293 to Turner et al.

Re: claims 1, 10, and 12-14. Ota et al. show in figure 3 a vehicle hydraulic brake device comprising a hydraulic pressure source MC,RS,HP,M,Acc for generating and outputting a predetermined hydraulic pressure, a pressure adjusting valve including a pressure adjusting mechanism RG for adjusting the output hydraulic pressure of the hydraulic pressure source to a value corresponding to a brake operating amount and wheel cylinders Wrl-Wfr actuated by the output hydraulic pressure of the pressure

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adjusting valve for imparting braking force to wheels of the vehicle, further comprising a hydraulic passage MR, the horizontal line between MR1 and MR2 leading from the pressure adjusting valve to the wheel cylinders, a hydraulic pressure supply passage AM for supplying hydraulic pressure from the hydraulic pressure source to the hydraulic passage at a junction shown on the horizontal line between MR1 and MR2 therewith, the hydraulic pressure supply passage by-passing the pressure adjusting mechanism of the pressure adjusting valve as shown, a first solenoid valve STR provided in the hydraulic pressure supply passage for reducing the output hydraulic pressure of the hydraulic pressure source and supplying it to the hydraulic passage leading from the pressure adjusting valve to the wheel cylinders, a second solenoid valve SA3 provided in the hydraulic passage at a location between the pressure adjusting valve and the junction and operable for reducing the output hydraulic pressure supplied from the hydraulic pressure supply passage and recirculated back to RS, MC and into MR, a check valve CV5 provided parallel to the second proportional valve and allowing fluid flow from the pressure adjusting valve toward the hydraulic pressure supply passage and a control means ECU for controlling operations of the first and second solenoid valves, wherein control of the hydraulic pressure supplied to the wheel cylinders during automatic brake control is performed by the first solenoid valve and the second solenoid valve as disclosed in col. 10 lines 3-4.

Ota et al. are silent with regards to the first and second solenoid valves being proportional valves or specifically of the type in which the degree of valve openness is adjustable between a closed position and a plurality of open positions of different

degrees of openness, the controller being capable of individually adjusting the degrees of openness of the first and second solenoid valves to required levels between their fully open and fully closed positions to adjust the wheel cylinder pressure to a required level and the controller applying a control current to each of the first and second solenoid valves to control differential pressure between upstream hydraulic pressure and downstream hydraulic pressure of each of the first and second proportional solenoid valves to a value corresponding to the applied control current.

Turner et al. teach in col. 8 lines 52-54 the use of a solenoid valve 24 in the form of a proportional valve of the type in which the degree of valve openness is adjustable between a closed position and a plurality of open positions of different degrees of openness, the controller 33 being capable of individually adjusting the degrees of openness of the solenoid valve to required levels between their fully open and fully closed positions as shown in figures 5 and 6 to adjust pressure to a required level and the controller 33 applying a control current to the solenoid valves to control differential pressure between upstream hydraulic pressure and downstream hydraulic pressure of the proportional solenoid valve to a value corresponding to the applied control current.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the first and second solenoid valves of Ota et al. to have included proportional valves, as taught by Turner et al., in order to provide a means of savings in energy due to loss free adaptation of pressure and flow to actual requirements.

Re: claims 2, 3, and 11. See the rejection of claim 1 and, as shown in figure 3 of Ota et al., a pressure chamber within the element labeled MC connected to the pressure regulating chamber as shown (RG is connected to MC), a master cylinder MC (and RS in this case is the hydraulic pressure source for generating and outputting a predetermined hydraulic pressure by way of control of MC) inherently including a master piston actuated by the output pressure of the pressure adjusting valve introduced into the pressure chamber since, as broadly claimed, the hydraulic pressure of the pressure adjusting valve is circulated throughout the brake device, a solenoid valve PC3 for supplying the output hydraulic pressure of the pressure adjusting valve to a hydraulic system leading from the master cylinder to the wheel cylinder Wrr, a hydraulic pressure supply passage as set forth above connected to a hydraulic passage as set forth above connecting the pressure adjusting valve to the solenoid valve.

5. Claims 4, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ota et al. in view of Turner et al. as applied to claims 1-3 above, and further in view of US Patent 6422662 to Haas.

Ota et al., as modified, lack the limitation of the means for detecting that the output hydraulic pressure of the pressure adjusting valve has become equal to the hydraulic pressure of the hydraulic pressure supply passage, and wherein when it is detected by the means that the output hydraulic pressure of the pressure adjusting valve has become equal to the hydraulic pressure of the hydraulic pressure supply passage, automatic brake control is stopped.

Haas teaches in the abstract, in col. 4 lines 24-44, and in figure 1 the use of a

brake device in which a means 107,108,110 for detecting that the output hydraulic pressure of above valve 113 has become equal to the hydraulic pressure of the hydraulic pressure supply passage or the area below valve 113, and wherein when it is detected by the means that the output hydraulic pressure of the pressure adjusting valve has become equal to the hydraulic pressure of the hydraulic pressure supply passage or when the pressure at the wheel cylinders is higher than the hydraulic , automatic brake control is stopped.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device of Ota et al., as modified, to have included means for detecting and comparing the hydraulic pressures, as taught by Haas, in order to provide a means of determining when to trigger pump activation.

Response to Arguments

6. Applicant's arguments filed 8/22/06 have been fully considered but they are not persuasive. Applicant argues that the master cylinder of Ota is operated by depression of a brake pedal and not a power driven pump and that Ota's reservoir is not an accumulator that accumulates pressure produced by a pump. Examiner disagrees. Amended claims 1 and 3 require the hydraulic pressure source including a power-driven pump for producing hydraulic pressure and a pressure accumulator for accumulating hydraulic pressure produced by the pump. Ota et al. show in figure 3 a hydraulic pressure source MC,RS,HP,M,Acc including a power-driven pump HP for producing hydraulic pressure and a pressure accumulator Acc for accumulating hydraulic pressure

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produced by the pump. Therefore, the Ota et al. reference reads on the claimed limitation.

7. Applicant's arguments, see pgs. 10 and 12, filed 8/22/06, with respect to the rejection(s) of claim(s) 1-3, 10, 11, and 12-14 under 102(b) using the Ota et al. reference have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ota et al. in view of Turner et al.

8. Examiner also wishes to clarify that claims 7-9 have been withdrawn from consideration as set forth originally in the office action of 5/23/05. The office action summary of 5/22/06 inadvertently lists claims 7-9 as being rejected; however, the claims were not treated in the body of the office action mailed 5/22/06.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 5813226 to Krone et al. teach the use of a proportional solenoid valve being adjusted to only one required position between a fully open position and a fully closed position. US Patent 4386626 to Hehl teach the energy savings benefit associated with using proportional valves instead of ordinary open/close valves.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melody M. Burch whose telephone number is 571-272-7114. The examiner can normally be reached on Monday-Friday (6:30 AM-3:00 PM).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James McClellan can be reached on 571-272-6786. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

mmb
November 1, 2006

Melody M. Burch
Melody M. Burch
Primary Examiner
Art Unit 3683

11/1/06